ADVANCES IN PHYSICS

VOLUME 37

Editor
D. Sherrington

Associate Editors
A. A. Abrikosov, B. R. Coles, S. Doniach
P. Fulde, P. Pincus, S. Tanaka, J. W. White

Advisory Board
Sir Nevill Mott, P. Nozières
C. Rizzuto, A. Zawadowski

Taylor & Francis
London • New York • Philadelphia

Advances in Physics

Editor D. SHERRINGTON, Department of Physics, Imperial College, Prince Consort Road, London SW7 2BZ, UK

Associate Editors A. A. ABRIKOSOV, Landau Institute for Theoretical Physics, Kosygina 2, Moscow 117334, USSR
B. R. COLES, Department of Physics, Imperial College, Prince Consort Road, London SW7 2BZ, UK
S. DONIACH, Department of Applied Physics, Stanford, California 94305, USA
P. FULDE, Max-Planck-Institut für Festkörperforschung, Heisenbergstr 1, 7000 Stuttgart 80, FRG
P. PINCUS, Materials Department, University of California, Santa Barbara, California 93106, USA
S. TANAKA, Superconductivity Research Centre, 1-10-13 Shinonome, Kohtoh-ku, Tokyo 113, Japan
J. W. WHITE, Research School of Chemistry, The Australian National University, GPO Box 4, Canberra, ACT 2601, Australia

Advisory Board N. F. MOTT (Cambridge), P. NOZIÈRES (Grenoble), C. RIZZUTO (Genoa), A. ZAWADOWSKI (Budapest)

Subscription Information

Advances in Physics (*ISSN 0001–8732*) is published bimonthly by Taylor & Francis Ltd, 4 John Street, London WC1N 2ET, UK.

Annual Subscription 1989 £169, US$323.

Second class postage paid at Jamaica, New York 11431 USA Postmasters: Send address changes to *Advances in Physics*, Publications Expediting Inc., 200 Meacham Avenue, Elmont, New York 11003. Air freight and mailing in the USA by Publications Expediting Inc., 200 Elmont, New York 11003.

Printed in UK by Taylor & Francis (Printers) Ltd, Rankine Road, Basingstoke, Hampshire RG24 0PR, UK. The paper used in this publication is 'acid free' and conforms to the American National Standards Institute requirements in this respect.

Dollar rates apply to subscribers in all countries except the UK and the Republic of Ireland where the pound sterling price applies. All subscriptions are payable in advance and all rates include postage. Journals are sent by air to the USA, Canada, Mexico, India, Japan and Australasia. Subscriptions are entered on an annual basis, i.e. January to December. Payment may be made by sterling cheque, dollar cheque, international money order, National Giro, or credit card (Amex, Visa, Mastercard/Access).

Orders originating in the following territories should be sent direct to the local distributor. **Australia:** R. Hill & Son Ltd, 117 Wellington Street, Windsor, Victoria 3181. **New Zealand:** R. Hill & Son Ltd, Private Bag, Newmarket, Auckland 1. **India:** Universal Subscription Agency Pvt, Ltd, 101–102 Community Centre, Malviya Nagar Extn. Post Bag No. 8, Saket, New Delhi 110017. **Japan:** Kinokuniya Company Ltd, Journal Department, PO Box 55, Chitose, Tokyo 156. **USA, Canada and Mexico:** Taylor & Francis, Inc., 242 Cherry Street, Philadelphia, Pennsylvania 19106-1906. **UK and all other territories:** Taylor & Francis Ltd, Rankine Road, Basingstoke, Hampshire RG24 0PR.

Advertisements

All enquiries to Taylor & Francis Ltd, Basingstoke (0256) 840366 or Taylor & Francis New York Inc (212) 725-1999.

Copyright © 1988 Taylor & Francis Ltd

All rights reserved. Authors are themselves responsible for obtaining permission to reproduce copyright material from other sources and are required to sign a form for agreement of the transfer of copyright. All requests from third parties to reprint material held in copyright by Taylor & Francis must be referred to the author for consent as a condition of the granting by Taylor & Francis of permission for reproduction. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, or by any means, electronic, electrostatic, magnetic, mechanical, photocopying, recording or otherwise, without prior permission in writing from the copyright holder. 0001-8732/88 $5·00 © 1988 Taylor & Francis Ltd.

Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by Taylor & Francis Ltd for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee is paid directly to CCC, 27 Congress Street, Salem, Massachusetts 01970 USA. (For fee per article see copyright code on title page of each paper.) This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising, for creating new collective works, or for resale. Fees for past articles are the same as those shown for current articles.

CONTENTS

VOLUME 37 Page

Articles published in Volumes 32–36 i–iii

Free and self-trapped excitons in cryocrystals: kinetics and relaxation processes
I. Ya. Fugol' 1

Many-body effects in core-level spectroscopy of rare-earth compounds
A. Kotani, T. Jo and J. C. Parlebas 37

The physics of ternary graphite intercalation compounds
S. A. Solin and H. Zabel 87

Pattern selection in fingered growth phenomena
David A. Kessler, Joel Koplik and Herbert Levine 255

Beyond the method of images—the interaction of charged particles with real surfaces
P. J. Jennings and R. O. Jones 341

The silver halide photographic process
J. F. Hamilton 359

Organic layered superconductors
L. N. Bulaevskii 433

Non-Gaussian models for the statistics of scattered waves
E. Jakeman and R. J. A. Tough 471

Micro, macro and thermal concepts in quantum field theory
H. Umezawa and Y. Yamanaka 531

Scanning tunnelling microscopy of charge-density waves in transition metal chalcogenides
R. V. Coleman, B. Giambattista, P. K. Hansma, A. Johnson, W. W. McNairy and C. G. Slough 559

CONTENTS OF VOLUMES 32–36

VOLUME 32

	Page
Angle-resolved measurements of the photoemission of electrons in the study of solids. F. J. Himpsel	1
Supersymmetry and theory of disordered metals. K. B. Efetov	53
Critical behaviour of the phase transition in the 2D Ising Model with impurities. Vik. S. Dotsenko and Vl. S. Dotsenko	129
Generalized hydrodynamics of systems of Brownian partiles. W. Hess and R. Klein	173
Compositional and doping superlattices in III–V semiconductors. K. Ploog and G. H. Döhler	285
Electronic structure of amorphous semiconductors. J. Robertson	361
Exact results in the theory of magnetic alloys. A. M. Tsvelick and P. B. Wiegmann	453
Theory of interacting donor electrons in the Anderson-localized regime of semiconductors. T. Takemori and H. Kamimura	715
Transport phenomena at metal surfaces. L. A. Falkovsky	753
Morphology and statistical statics of simple microclusters. M. R. Hoare and J. A. McInnes	791
The optical properties of thallium-like impurities in alkali-halide crystals. A. Ranfagni, D. Mugnai, M. Bacci, G. Viliani and M. P. Fontana	823

VOLUME 33

The smectic state. J. Prost	1
Electric currents and resistive states in thin superconductors. B. I. Ivlev and N. B. Kopnin	47
NMR-NQR studies of structural phase transitions. A. Rigamonti	115
Semimagnetic semiconductors. N. B. Brandt and V. V. Moshchalkov	193
Electron–electron scattering in conducting materials. M. Kaveh and N. Wiser	257
Concentrated Kondo systems. N. B. Brandt and V. V. Moshchalkov	373
High pressure properties of graphite and its intercalation compounds. R. Clarke and C. Uher	469
EXAFS in catalysis. P. Lagarde and H. Dexpert	567
Sonoluminescence. A. J. Watson and G. T. Reynolds	595

VOLUME 34

Page

Self-organization processes in continuous media. A. HASEGAWA 1

Impurity states and electron transport in gapless semiconductors. I. M. TSIDILKOVSKI, G. I. HARUS and N. G. SHELUSHININA 43

Coexistence of superconductivity and magnetism. Theoretical predictions and experimental results. L. N. BULAEVSKII, A. I. BUZDIN, M. L. KULIĆ and S. V. PANJUKOV 175

Diffusion of hydrogen in metals. Y. FUKAI and H. SUGIMOTO 263

Editorial. 80th Birthday greeting to Professor Sir Nevill Mott 327

Metal–insulator transitions in non-crystalline systems. N. F. MOTT and M. KAVEH 329

Resistivity anomalies due to valence fluctuations. D. WOHLLEBEN and B. WITTERSHAGEN 403

Neutron diffraction methods for the study of residual stress fields. A. J. ALLEN, M. T. HUTCHINGS and C. G. WINDSOR 445

An applied science perspective of Langmuir–Blodgett films. G. G. ROBERTS 475

Polarization dependence of natural and field-induced one-photon and multi-photon interaction. G. E. STEDMAN 513

Magnetic excitations in crystal-field split 4f systems. P. FULDE and M. LOEWENHAUPT 589

Quantum $1/f$ noise associated with ionized impurity scattering and electron–phonon scattering in condensed matter. G. S. KOUSIK, C. M. VAN VLIET, G. BOSMAN and P. H. HANDEL 663

A dynamic scaling assumption for phase separation. H. FURUKAWA 703

VOLUME 35

Page

Computational statistical mechanics. Methodology, applications and super-computing. F. F. ABRAHAM 1

Erratum 113

Properties of II–VI semiconductors associated with moving dislocations. YU. A. OSIP'YAN, V. F. PETRENKO, A. V. ZARETSKIĬ and R. W. WHITWORTH 115

Muon spin rotation as a tool for investigating the diffusion of positive muons in type-II semiconductors. E. H. BRANDT and S. SEEGER 189

The thermal oxidation of silicon. The special case of the growth of very thin films. F. ROCHET, S. RIGO, M. FROMENT, C. d'ANTERROCHES, C. MAILLOT, H. ROULET and G. DUFOUR 237

Electronic structure of cerium and light rare-earth intermetallics. J. W. ALLEN, S. J. OH, O. GUNNARSSON, K. SCHÖNHAMMER, M. B. MAPLE, M. S. TORIKACHIVILI and I. LINDAU 275

Amorphous carbon. J. ROBERTSON 317

Aharonov–Bohm effect in normal metal. Quantum coherence and transport. S. WASHBURN and R. A. WEBB 375

Theory of electromagnetic generation of acoustic waves in metals. E. KARTHEUSER, L. R. RAM MOHAN and S. RODRIGUEZ 423

The structure and energies of defects in liquid crystals. S. CHANDRESEKHAR and G. S. RANGANATH 507

VOLUME 36 Page

Electronic properties of intercalation complexes of the transition metal dichalcogenides. R. H. FRIEND and A. D. YOFFE 1

Continuous random networks. From graphs to glasses. N. RIVIER 95

A.c. conduction in amorphous chalcogenide and pnictide semiconductors. S. R. ELLIOTT 135

Kinetic properties of two-dimensional metal systems. R. N. GURZHI, A. I. KOPELIOVICH and S. B. RUTKEVICH 221

Twinning-plane superconductivity. I. N. KHLYUSTIKOV and A. I. BUZDIN 271

The temperature and energy distribution of photoexcited hot electrons. S. E. ESIPOV and Y. B. LEVINSON 331

Solitons in polyacetylene. S. ROTH and H. BLEIER 385

The theory of the cohesive energies of solids. G. P. SRIVASTAVA and D. WEAIRE 463

Incommensurability in crystals. T. JANSSEN and A. JANNER 519

The microgeometry and transport properties of sedimentary rock. A. H. THOMPSON, A. J. KATZ and C. E. KROHN 625

Diffusion in disordered media. S. HAVLIN and D. BEN-AVRAHAM 695

Mean-field theory of intermediate valence/heavy fermion systems. D. M. NEWNS and N. READ 799